START 9513338.1865

0040897

S

Mr. John Grantham
State of Washington
Department of Ecology
Nuclear & Mixed Waste Program
P. O. Box 47600
Olympia, WA 98504-7600

FLUOR DANIEL, INC.

Date: June 3, 1994

Reference: Hanford Waste Vitrification Plant
DOE Contract DE-AC06-86RL10838
Fluor Contract 8457

Transmittal No.: WDOE-931

Dear Mr. Grantham:

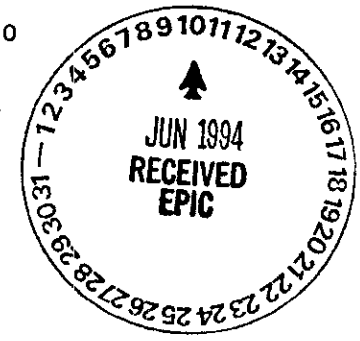
TRANSMITTAL

We enclosed 1 copy of the items listed below. These are issued per US-DOE request.

Response due to Fluor: N/A
Responds to: DOE REQUEST

NUMBER	REV	DATE	TITLE
DCN - 0176	0	06/03/94	DCN TITLE: REVISION OF OPERATING REQUIREMENTS AND DESIGN STANDARDS FOR THE FIREWATER HEATER PUMP. NOTE: "FOR RCRA PART B PERMIT"

Distribution:
R. L. Long - DOE-RL, w/0
TWP/AME Corresp Cntrl Cntr MSIN A5-10 (A160 PACKAGE), w/0
P. Felise - WHC-RL (MSIN G6-06), w/0
Environmental Data Management Center (MSIN H6-08), w/1
D. Duncan - US EPA, Region X, w/0
M.D. Talbot, WHC -w/0



Very truly yours,

Nazy Eshraghi for

R. S. Poulter
Project Director

RSP:DGL:nre

FLUOR DANIEL 9513338.1886

US DEPARTMENT OF ENERGY
HANFORD WASTE VITRIFICATION PLANT

DESIGN CHANGE NOTICE

DCN – 0176 REV 0 PAGE 1 OF 9

DCN TITLE
Revision of operating requirements and design standards for the Firewater Heater Pump.

DATE INITIATED
7 March 1994

PACKAGE NO.
A160

SECTION 1: DESCRIPTION OF CHANGE

This DCN revises the operating requirements for the Fire Water Heater Pump, PX-500-003, to conform to revised process requirements. Also, it revises the design standard for pumps from API-610 to ASME B73.1M.

FOR LIST OF AFFECTED DOCUMENTS, SEE SECTIONS 6 AND 7.

CAUSE OF CHANGE:

- ☐ Field Change Request
- ☐ Supplier Disposition
- ☐ Deficiency Report
- ☐ Design Development
- ☐ Change Request
- ☐ TBD/Hold
- ☒ Other Title III Review

N/A
Initiating Document(s)

SECTION 2: EVALUATION

			IF "YES", ADDITIONAL REVIEW REQUIRED BY:	REVIEWER COMMENTS AND SIGNATURE/DATE
WAPA DWG/SPEC?	☒ NO	☐ YES		
QUALITY LEVEL I DWG/SPEC?	☒ NO	☐ YES		
SAFETY CLASS 1 OR 2 DWG/SPEC?	☒ NO	☐ YES		
SYSTEMS ANALYSES AFFECTED?	☒ NO	☐ YES		
MULTI-DISCIPLINE CHANGE?	☒ NO	☐ YES		

DCN Evaluated by: Systems Patricia Brant 3/11/94 ADM G. Clore Others

SECTION 3: APPROVED FOR CONSTRUCTION

Donald H. LaBounty 11 MAR 94
Originator Date

Donald H. LaBounty for P. Bedell 11 MAR 94
Project/Resident Engineer Date

SECTION 4: CONCURRENCE

Project Management 4/23/94 Date

Homer E. Savage 4/25/94
Systems Date

Independent Safety 4/28/94 Date

Quality Assurance 4-28-94 Date

Configuration Management 4-26-94 Date

SECTION 5: RELEASED FOR CONSTRUCTION

PE STAMP REQUIRED? ☐ NO ☒ YES

WHC 5/25/94 Date

UCAT 5-25-94 Date

DOE 5/25/95 Date

COMMENTS:

FLUOR DANIEL 9512358.1887

US DEPARTMENT OF ENERGY
HANFORD WASTE VITRIFICATION PLANT

DESIGN CHANGE NOTICE

	REV	DISCIPLINE	PKG. NO.	PAGE
DCN - 0176	0	Mech	A160	2

PREPARED BY: D. G. LaBounty Date: 7 March 1994

DISCIPLINE ENGINEER: D. G. LaBounty Date: 7 March 1994

SECTION 6: CONSTRUCTION DOCUMENTS AFFECTED

DOCUMENT NUMBER	SHT/ PAGE	REV NO	DOCUMENT NAME	INCLD Y/N	DESCRIPTION OF CHANGE
B-595-C-A160-15541	1, 6, 7, 8, 9, 10, A160-DS-1	1	Fire Water Unit Heater Pump	Yes	Revised operating conditions and governing pump design standard.

SECTION 7: NON-CONSTRUCTION DOCUMENTS AFFECTED

This section references affected items such as P&IDs or calculations/analyses, but they are generally not included in DCN package.

DOCUMENT NUMBER	SHT/ PAGE	REV NO	DOCUMENT NAME	DESCRIPTION OF CHANGE
H-2-123358	2	9	P&ID SYSTEM 50 FIRE AND PROCESS WATER STORAGE	Revised Differential Pressure of PX-500-003 Fire Water Heater Pump

FLUOR DANIEL

U. S. Department of Energy
Hanford Waste Vitrification Plant
Richland, Washington
DOE Contract DE-AC06-86RL10838

CENTRIFUGAL PUMPS

NO.	BY / DATE	REVISION
		ISSUED FOR DEPARTMENT OF ECOLOGY PERMIT ONLY

SHEET NO. A160-DS-1 REV. 1
DATE 07-23-91 CONTRACT 845734
TAG NO. PX-500-003
SPECIFICATION SECT NO. 15541
FOR CLIENT USE
ORIG. JJ CHK'D CD APPR'D

ALL ITEMS SHALL COMPLY WITH GENERAL SPECIFICATION SHEETS: A160-15541

Service: FIRE WATER UNIT HEATER PUMP
Pump Mfr.:
Size & Type:
No. Stages:
Serial No.:

No. Motor Driven: 1
Pump Tag No.: PX-500-003 FIRE WATER UNIT HEATER PUMP
Motor Tag No.: SAME
Motor Provided By: PUMP MFR.

No. Pumps Req.: 1
No. Turbine Driven:
Pump Tag No.:
Turbine Tag No.:
Turbine Provided By:
Turbine Mounted By:

LIQUID

Name: WATER
Pumping Temperature (°F):
Normal 60 Max. 80 Min. 45
Specific Gravity: @ 60 °F = 1.00
Vapor Press. (PSIA): 0.256
Viscosity (CP): @ 60 °F = 1.129
Corrosion/Erosion Caused By: NONE
Remarks: CONTINUOUS OPERATION

OPERATING CONDITIONS

Capacity (U.S. GPM):
Normal 8.1 Rated 10
Discharge Pressure (PSIG): 21
Suction Pressure (PSIG):
Max. Rated -1.8
Differential Pressure (PSI): 23
Differential Head (Feet): 53.1
NPSH Available (Feet): 28.2
Hydraulic Power (HP): 0.13

SITE CONDITIONS

Temp. (°F): Max. 110 Min. 60
Rel. Humid. (%): Max. 100 Min. 10
Altitude (Feet):
(•) Indoor (•) Heated ( ) Roof
( ) Outdoor ( ) Unheated ( ) Sun
Area Classification: 3
Other:
Remarks: DCN-0176

PERFORMANCE (To Be Completed By Manufacturer)

Proposal Curve No.:
Speed (RPM):
Efficiency (%):
Rated Power (BHP):

Minimum Continuous Flow (GPM):
Thermal Stable
Max. Head Rated Imp. (Feet):
Max. Power Rated Imp. (BHP):

NPSH Required (Feet Water):
3% Head Drop
Suction Specified Speed:

CONSTRUCTION (To Be Completed By Purchaser and Manufacturer)

NOZZLES	SIZE	RATING	FACING	LOCATION
Suction	1 1/2	150	R.F.	
Discharge	1	150	R.F.	

MISC. CONNECTIONS	SIZE	TYPE
Drain		
Vent		
Pressure Gage		
Warm Up		
Balance Line		

Casing Mount: [X] Foot [ ] Bracket
Centerline [ ] Near Cntrl. [ ] Inline
Casing Split: [ ] Axial [X] Radial
Casing Type: [ ] Diffuser [ ] Staggered
[X] Single Volute [ ] Double Volute
Max. Allowable Pressure (PSIG):
At 80 °F
At Norm. Pump Temp.
Hydro Test Pressure (PSIG):
Lubrication Type: [ ] API 614
[X] Grease [ ] Ring Oil [ ] Oil Mist
[ ] Flood [ ] Flinger [ ] Pressure
Remarks:

Impeller Diameter (Inches)
Rated Max. Min.
Impeller Type: [X] Open [ ] Closed
Imp. Suction: [X] Single [ ] Double
Imp. Mount: [ ] Btwn. Brgs [X] Overhung
Rotation (Coupling End): [ ] CW [ ] CCW
Bearing (Type/Number):
Radial
Thrust
Coupling:
Manufacturer
Type/Model
Driver Half-Coupling Mounted By:
(•) Pump Mfr. ( ) Driver Mfr. ( ) Purchaser

Packing:
Manufacturer
Type
Size/No. Rings
Mechanical Seal:
API Class Code X
Manufacturer
Model
Mfr. Code
( ) Cartridge Type Required
Gland Type/Mat'l.:
Gland Plate Taps Required for:
( ) Quench (•) Flush ( ) Drain ( ) Vent

AHMAD AMOUI STATE OF WASHINGTON 28683 REGISTERED PROFESSIONAL ENGINEER 6/30/94
EXPIRES 9-11-94

( ) = By Purchaser [ ] = By Mfr./ Purchaser

1.2 References

9513538.1889

Delete:

"AMERICAN PETROLEUM INSTITUTE (API)

API Std 610 1989 Centrifugal Pumps for General Refinery Service, 7th edition"

Add new publication:

"AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME):

ASME B73.1M 1991 Specifications for Horizontal End Suction Centrifugal Pumps for Chemical Process"

ISSUED FOR DEPARTMENT OF ECOLOGY PERMIT ONLY

AHMAD AMOLI STATE OF WASHINGTON 26693 REGISTERED PROFESSIONAL ENGINEER

EXPIRES 9-11-94

FLUOR DANIEL	U.S. DEPARTMENT OF ENERGY HANFORD WASTE VITRIFICATION PLANT	DESIGN CHANGE NOTICE		
DESCRIPTION OF CHANGE Revision of design conditions and standards for the Firewater Heater Pump		BASE DOC. NO. B-595-C-A160-15541 SHT/PG. 1 REV. 1		
		DISCIPLINE: Mech		
PREPARED BY: D. G. LaBounty	DATE: 7Mar94	DCN - 0176	REV 0	PAGE 4
DISCIPLINE ENGINEER: D. G. LaBounty	DATE: 7Mar94			

FORM REV. 09/23/93
P:\8457\DCNS\1 03/08/94 8:12am

9513338.1890

2.2.1 General Requirements

Delete the sentence in the first paragraph:

> "The pump operating point shall be within 10 percent and to the left of the peak efficiency on the pump performance curve.

In the second paragraph, revise the phrase "and API STD 610" to read "and ASME B73.1M."

ISSUED FOR DEPARTMENT OF ECOLOGY PERMIT ONLY

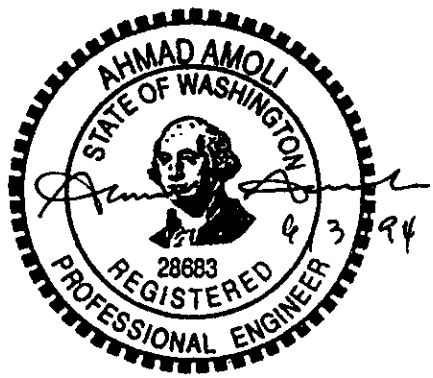
AHMAD AMOLI
STATE OF WASHINGTON
28683
REGISTERED
PROFESSIONAL ENGINEER
4/13/94

EXPIRES 9-11-94

FLUOR DANIEL — U.S. DEPARTMENT OF ENERGY, HANFORD WASTE VITRIFICATION PLANT		DESIGN CHANGE NOTICE		
DESCRIPTION OF CHANGE Revision of design conditions and standards for the Firewater Heater Pump		BASE DOC. NO. B-595-C-A160-15541 SHT/PG. 6 REV. 1		
		DISCIPLINE: Mech		
PREPARED BY: D. G. LaBounty	DATE: 7Mar94	DCN – 0176	REV 0	PAGE 5
DISCIPLINE ENGINEER: D. G. LaBounty	DATE: 7Mar94			

2.2.6 Coupling

Revise the phrase: "at 1750 rpm" to read "at full load rpm."

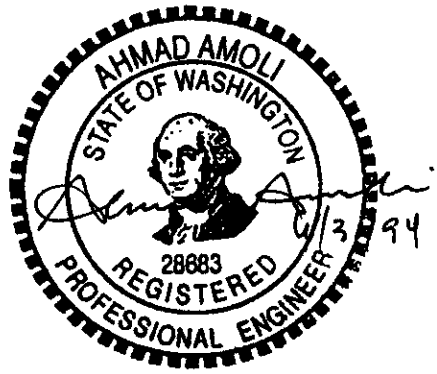


EXPIRES 9-11-94

FLUOR DANIEL — U.S. DEPARTMENT OF ENERGY, HANFORD WASTE VITRIFICATION PLANT		DESIGN CHANGE NOTICE		
DESCRIPTION OF CHANGE Revision of design conditions and standards for the Firewater Heater Pump		BASE DOC. NO. B-595-C-A160-15541 SHT/PG. 7 REV. 1		
		DISCIPLINE: Mech		
PREPARED BY: D. G. LaBounty	DATE: 7Mar94	DCN – 0176	REV 0	PAGE 6
DISCIPLINE ENGINEER: D. G. LaBounty	DATE: 7Mar94			

2.2.9 Motor

Delete the phrase: "1800 RPM,"



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FLUOR DANIEL	U.S. DEPARTMENT OF ENERGY HANFORD WASTE VITRIFICATION PLANT	DESIGN CHANGE NOTICE		
DESCRIPTION OF CHANGE Revision of design conditions and standards for the Firewater Heater Pump		BASE DOC. NO. B-595-C-A160-15541 SHT/PG. 8 REV. 1		
		DISCIPLINE: Mech		
PREPARED BY: D. G. LaBounty	DATE: 7Mar94	DCN – 0176	REV 0	PAGE 7
DISCIPLINE ENGINEER: D. G. LaBounty	DATE: 7Mar94			

2.2.12 Factory Acceptance Tests (FATs)

In paragraph "B" revise "API STD 610" to read "ASME B73.1M."

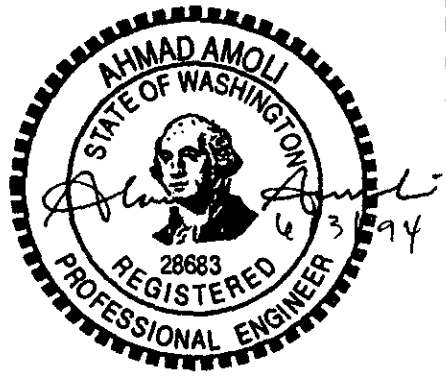
EXPIRES 9-11-94

FLUOR DANIEL — U.S. DEPARTMENT OF ENERGY, HANFORD WASTE VITRIFICATION PLANT		DESIGN CHANGE NOTICE		
DESCRIPTION OF CHANGE Revision of design conditions and standards for the Firewater Heater Pump		BASE DOC. NO. B-595-C-A160-15541 SHT/PG. 9 REV. 1		
		DISCIPLINE: Mech		
PREPARED BY: D. G. LaBounty	DATE: 7Mar94	DCN – 0176	REV 0	PAGE 8
DISCIPLINE ENGINEER: D. G. LaBounty	DATE: 7Mar94			

9515358.1894

2.5 Inspection and Testing

Revise the phrase: "...API STD 610, Paragraph 4.1, 4.2, 4.3"
to read "ASME B73.1M, Paragraph 5.2."



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		DISCIPLINE: Mech		
PREPARED BY: D. G. LaBounty	DATE: 7Mar94		REV	PAGE
DISCIPLINE ENGINEER: D. G. LaBounty	DATE: 7Mar94	DCN - 0176	0	9